

# Covington Woods Drainage Study PER Existing Conditions Result Public Meeting



July 18, 2013



**Lockwood, Andrews  
& Newnam, Inc.**  
A LEO A DALY COMPANY

- Presentation (6:00-6:30)
  - Background and Objectives
  - Approach
  - Schedule
  - Existing Conditions Review
  
- Working Session (6:30-7:30)
  - Existing Conditions Review

- Assess Existing Drainage Infrastructure
- Identify System Deficiencies
- Recommend Improvement Alternatives

- Project Kickoff– 3/4/2013
- Existing Conditions Model –5/2/13
- **Existing Conditions Public Meeting – 7/18/13**
- Proposed Conditions Analysis–7/30/13
- Report - 9/11/13

- Overland Flow – Water flowing in the streets
- Rainfall Frequency – How frequent a specific rainfall event occurs
  - 2-Year – 50% Annual Chance
  - 10-Year – 10% Annual Chance
  - 100-Year – 1% Annual Chance
- Validation Event – Historical storm event compared to model output
- Ponding Duration – Amount of time stormwater is ponded in streets.

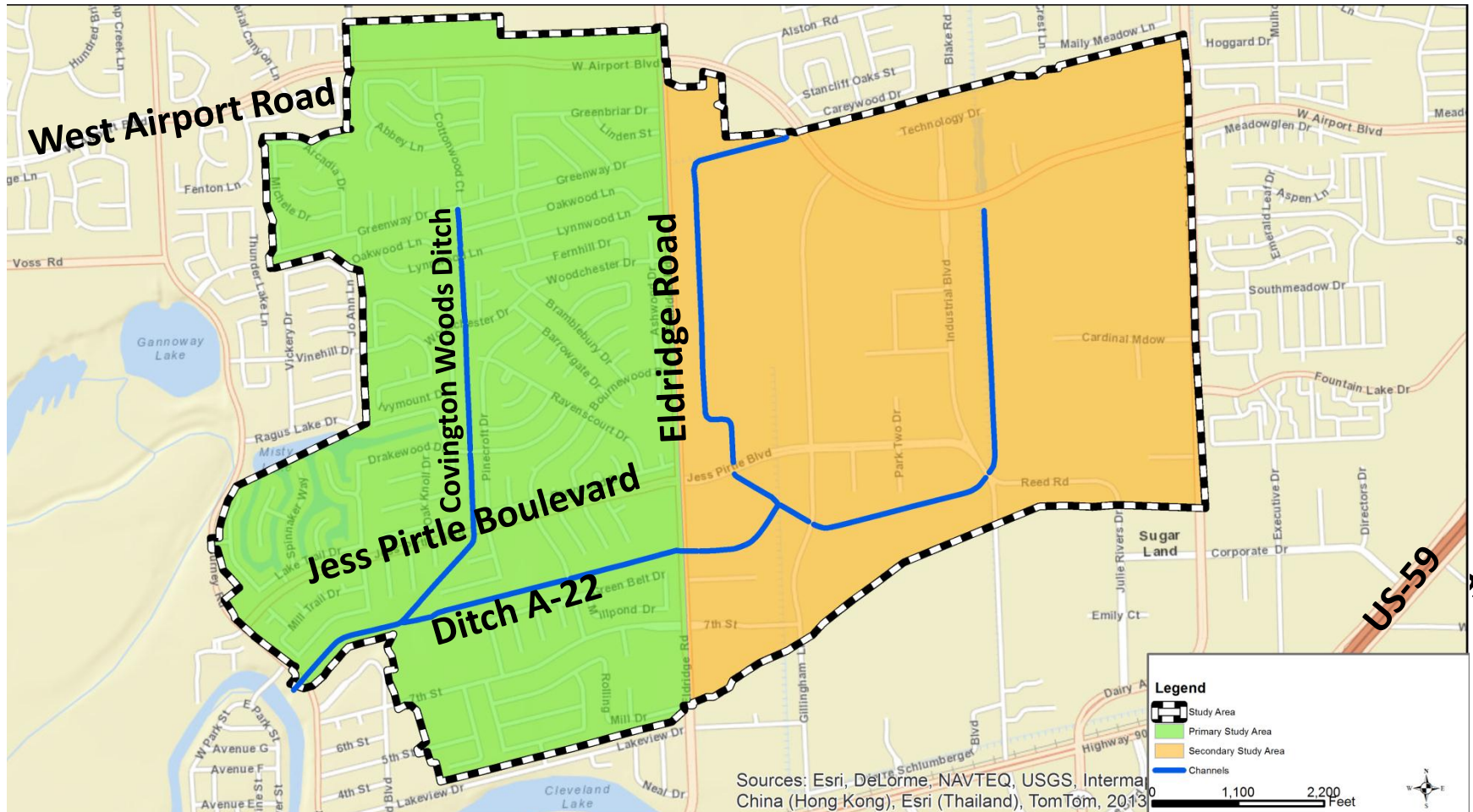
- Recent Significant Events
  - April 27, 2013 Storm Event (8” in 3 hours)
  - January 9, 2012 Storm Event (10.4” in 12 hours)
  - May 2012 Storm Event (5.5” in ~90 min)
- Active City Improvements
  - Targeted Conveyance Improvements
- Detailed Drainage Study (Current Study)

- Process for CIP Project Implementation
  - Screening of Drainage Problems
  - Ranking Severity
  - Prioritizing Projects
  - Funding Projects
- Threshold Screening
  - Structural Flooding for Major Events
  - Street Flooding for Minor Events
- Severity Ranking Method for CIP Projects

# Typical Infrastructure Design – Levels of Protection

- 2-Year (50% Annual Chance)
  - Water Surfaces Below Ground for Storm Sewers
  - Water Surfaces Within Banks for Ditches
  - 4.9” of Rainfall over 24-hours
- 10-Year (10% Annual Chance)
  - Water Surfaces Below Top of Curb
  - Ponding Duration Less than 4-hours
- 25-Year (4% Annual Chance)
  - Prevent Structural Inundation
- 100-Year (1% Annual Chance)
  - Overland Flow Contained to Street Right-of-Way(ROW)
  - Prevent Structural Inundation
  - 12.5” of Rainfall over 24-hours
  - Maximum Ponding Elevation Below:
    - 12” Above The Natural Ground or Abutting Lots
    - 9” Above Top of the Street Curb,
    - 12” Below the Lowest Slab Elevation Of Buildings on Abutting Lots

# Study Boundary



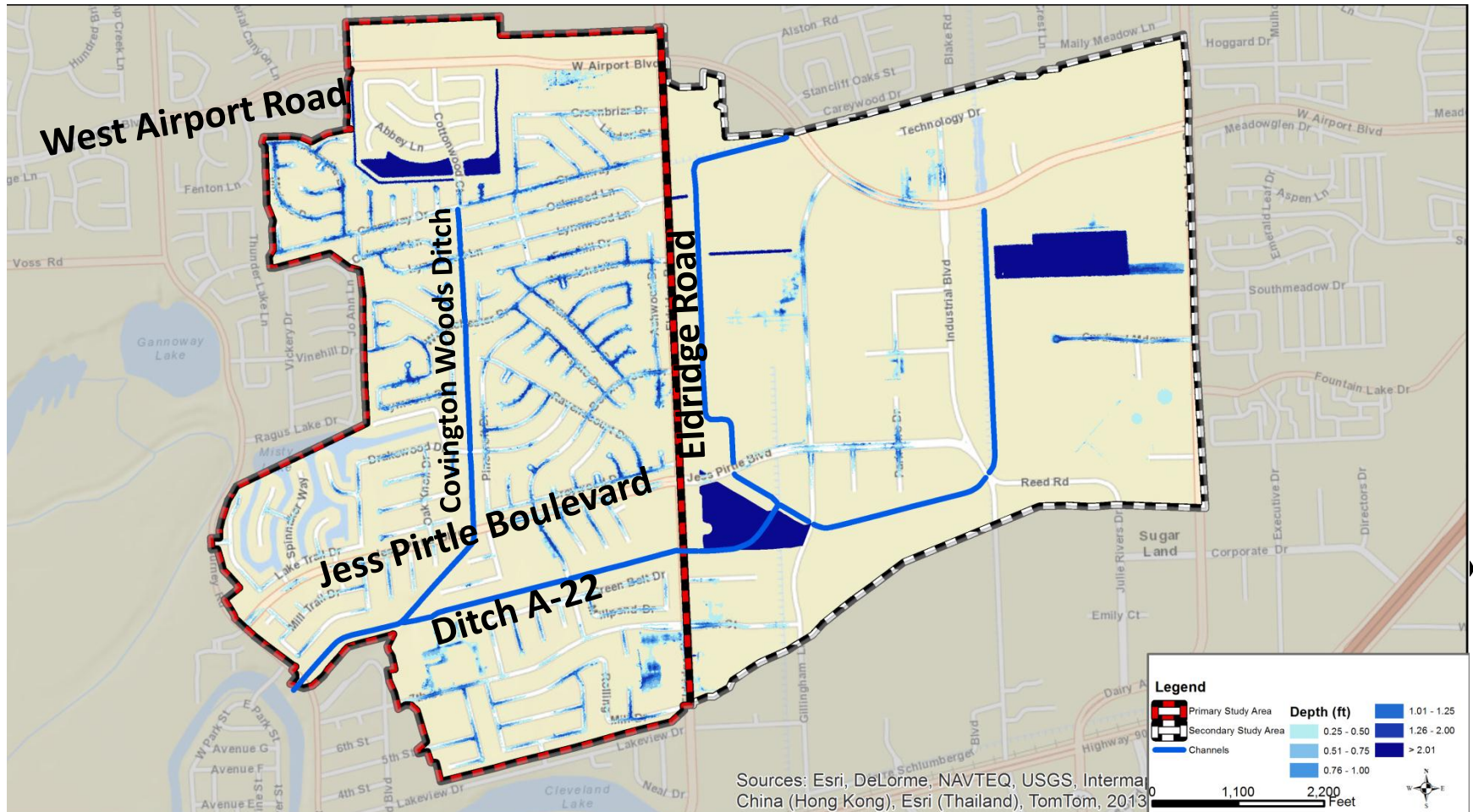
# Purpose of Public Meeting

- Review Modeling Results - Existing Conditions
  - April 27, 2013 Storm Event
- Model Validation - Confirm and Discuss
  - Flooding Extents
  - Flooded Structures
  - General Overland Sheet Flow Patterns and Direction
- Capture Resident Information

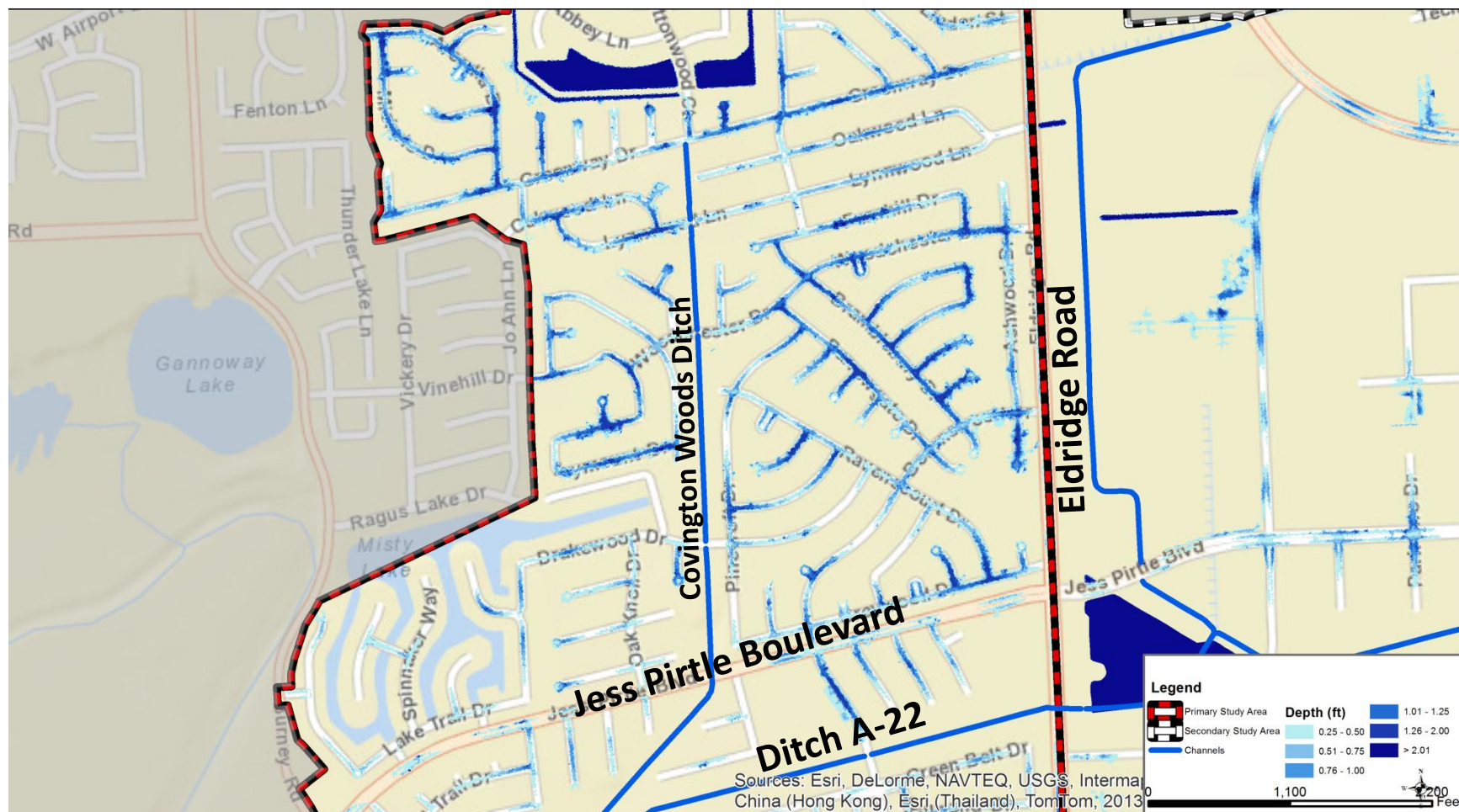
- Data Collection
- Existing Conditions Model
- Validate Model
- Identify System Deficiencies
- Objectively Recommend Improvement Alternatives
  - Benefit/Cost Ratio
  - Homes Removed from Flooding
  - Other Structures Removed from Flooding
  - CIP Project Overlap
  - Constructability
  - Critical Roadways Removed from Flooding
  - Construction Impact to Community
  - Time to Realize Benefits

- Approximately 8” of Rainfall in 2.5 Hours
- Total Rainfall of More than 8.4”
- Beyond Typical Infrastructure Design Criteria
- 10-Year (10%) Storm: 4.2” in 2 Hours or 4.7” in 3 Hours
- 100-Year (1%) Storm: 6.05” in 2 Hours or 6.85” in 3 Hours
- Tropical Storm Allison – Approximately 12”

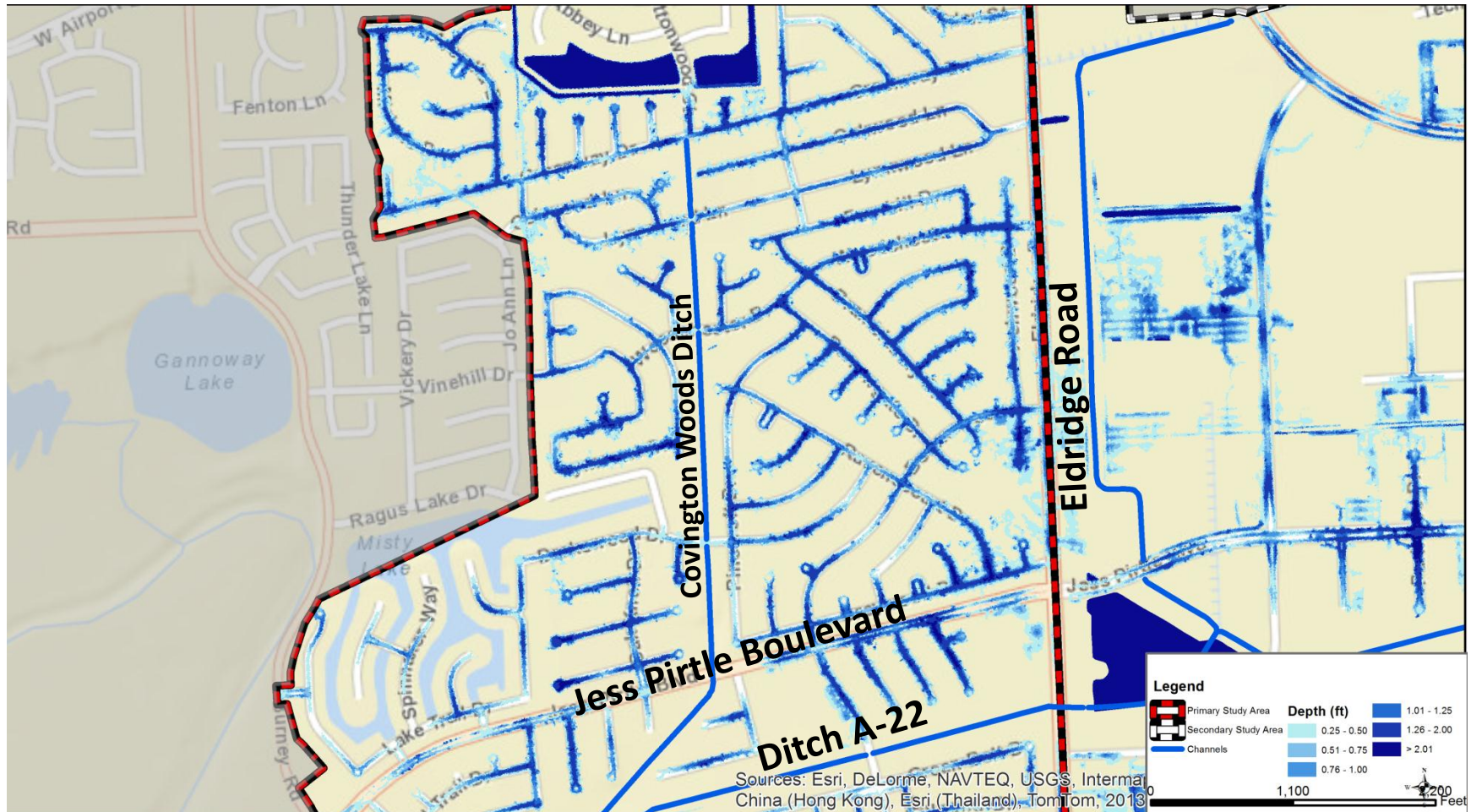
# April 2013 Event – Peak Inundation Extents



# April 2013 Event – Peak Inundation Extents, CW Focus

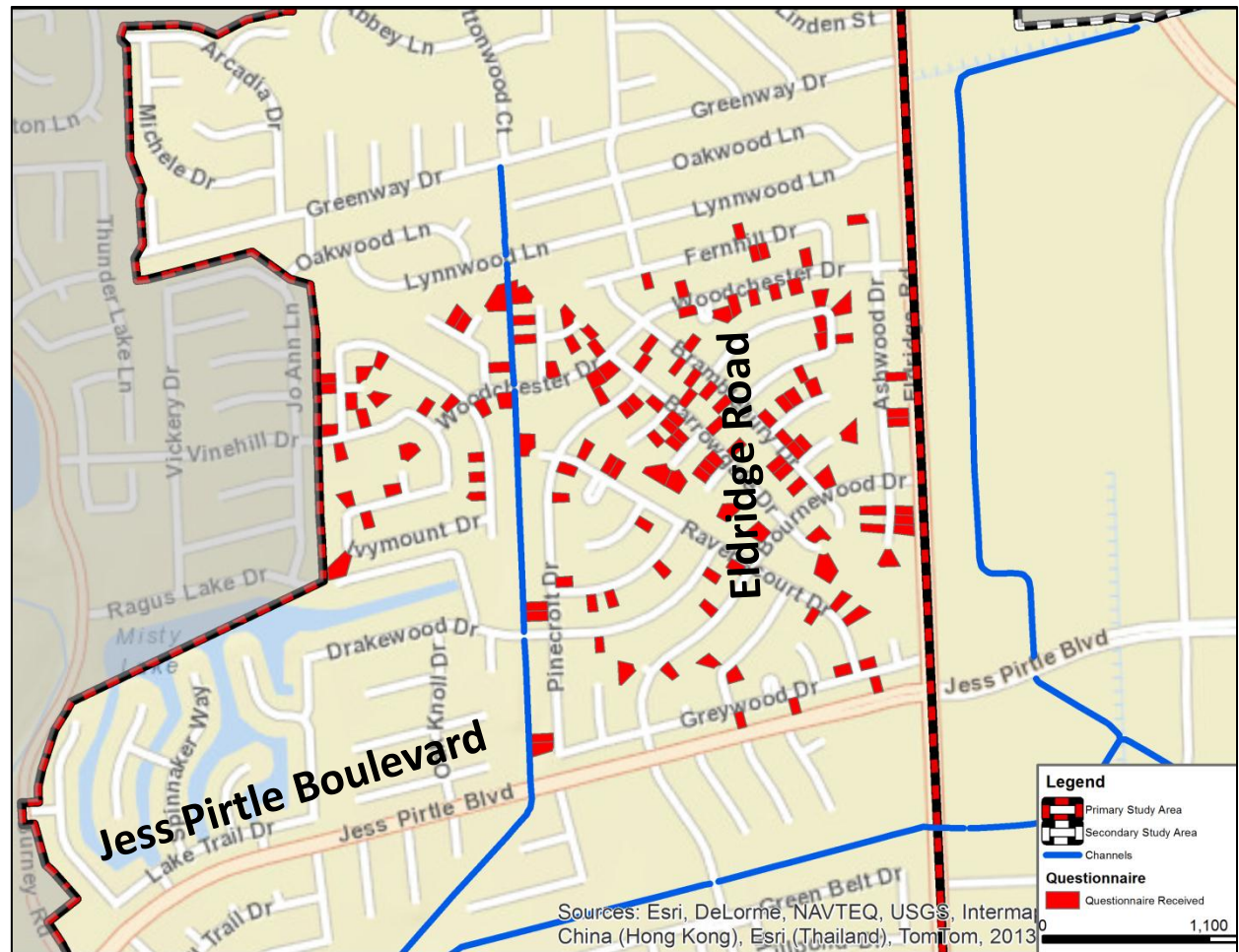


# Existing Conditions –100-Year Event Peak Inundation, CW Focus



# Drainage Questionnaires Received

- More than 1000 Surveys Mailed
- More than 150 Returned



- Ask Questions About the Study
- Sketch Flooding Issues on Exhibits
- Assist with Validating Model Output

# Questions?

<http://www.sugarlandtx.gov/>

Chris Steubing, PE, CFM  
City Engineer  
City of Sugar Land  
281-275-2780  
csteubing@sugarlandtx.gov

Robert Valenzuela, PE, CFM  
Director of Public Works  
City of Sugar Land  
281-275-2450  
rvalenzuela@sugarlandtx.gov



Derek St. John, PE, CFM  
Project Manager  
LAN  
713-821-0366  
dstjohn@lan-inc.com



**Lockwood, Andrews  
& Newnam, Inc.**  
A LEO A DALY COMPANY